WHAT IS CLAIMED IS:

1. A polymeric foam composite comprising a polymeric foam selected from polyurethane and polyisocyanurate foam that has opposing front and back surfaces, said foam comprising:

a) halogens at a concentration of at least 4 weight-percent (wt percent) based on foam weight, wherein at least 10 wt percent of the halogen concentration is from a highly-halogenated compound;

b) phosphorous at a concentration of at least 0.25 weight-percent based on foam weight;

c) a residual blowing agent composition containing less than 50 percent, based on residual blowing agent composition weight, of chlorofluorocarbon and hydrochlorofluorocarbon blowing agent(s);

d) flame-retarding fibers at an average concentration of at least one weight-percent, based on combined foam and fiber weight, within 0.125 inches (3.2 millimeters) of the foam's front surface;

e) a facing sheet adhered to at least the front surface, said facing sheet having an exposed metal sheet; and

wherein said polymeric foam composite passes both the wall and ceiling portions of the United Building Code 16-3 Room Corner Burn Test and meets qualifications for Factory Mutual 4880 approval.

2. The polymeric foam composition of Claim 1, wherein flame-retarding fibers are distributed within the foam from 0.5 inches (12.7 millimeters) or the thickness of the foam, whichever is less, and extending to within 0.125 inches (3.2 millimeters) of the foam's front surface.

3. The polymeric foam composite of Claim 1, wherein said foam further comprises residual halogenated polyol.

4. The polymeric foam composite of Claim 3, wherein said halogenated polyol is a brominated polyol.

5. The polymeric foam composite of Claim 3, wherein said halogenated polyol is tetrabromophthalate diol.

6. The polymeric foam composite of Claim 1, wherein said foam further comprises a halogenated phosphate.

7. The polymeric foam composite of Claim 6, wherein said phosphate is tris(2-chloropropyl) phosphate.

8. The polymeric foam composite of Claim 1, wherein said residual blowing agent composition consists of blowing agents selected from a group consisting of carbon dioxide, water, non-halogenated hydrocarbons, and 2-chloropropane.

9. The polymeric foam composite of Claim 1, wherein said residual blowing agent composition is free of halogenated blowing agents.

10. The polymeric foam composite of Claim 1, wherein said flame-retarding fibers are glass fibers.

11. The polymeric foam composite of Claim 1, wherein said flame-retarding fibers extend to the front surface of the polymeric foam.

12. The polymeric foam composite of Claim 1, wherein said flame-retarding fibers include fibers from an expandable fiber mat that are substantially uniformly distributed throughout the polymeric foam.

13. The polymeric foam composite of Claim 1, wherein the foam has a thickness of greater than 2 inches (5 centimeters).

14. A process for preparing the polymeric foam composite of Claim 1 comprising the steps:

(i) conveying a bottom facing sheet and a top facing sheet such that the top facing sheet is above and substantially planar to the bottom facing sheet;

(ii) disposing a flame-retarding fiber component between the facing sheets;

(iii) disposing a foamable mixture selected from polyurethane resin and polyisocyanurate resin foamable mixtures between the top and bottom facing sheets;

(iv) constricting the top and bottom facing sheets through a metering gap, achieving penetration of the foamable mixture into the fiber component;

(v) expanding the foamable mixture into a polymeric foam;

wherein the process is characterized by the following: steps (i) and (ii) can occur simultaneously; steps (ii) and (iii) can occur in any order with respect to one another; at least one of the facing sheets has an exposed metal sheet; and the foamable mixture contains a blowing agent composition having less than 50 wt percent chlorofluorocarbon and hydrochlorofluorocarbon blowing agents based on blowing agent weight and also contains sufficient halogen, phosphorous, and highly-halogenated compound to produce a foam meeting the requirement of Claim 1.

15. The process of Claim 14, wherein the top facing sheet comprises a metal foil adhered to a glass mat and the top facing sheet is oriented so that the glass mat is between the metal foil and the bottom facing sheet.

16. The process of Claim 14, wherein the fiber component comprises a first expandable fiber mat and step (ii) further comprises conveying the first expandable fiber mat onto the bottom facing sheet.

17. The process of Claim 14, wherein the fibrous component comprises a first expandable fiber mat that is part of a composite web that contains the first expandable fiber mat disposed on the bottom facing sheet.

18. The process of Claim 17, wherein the first expandable fiber mat is a low binder expandable fiber mat.

19. The process of Claim 16, further comprising conveying a composite web containing a low binder fiber mat disposed on a support web between the facing sheets and onto the first expandable fiber mat prior to step (iv) such that the support web is between the low binder mat and the first expandable fiber mat and wherein foamable mixture penetrates the composite web in step (iv).